

What is claimed is:

1. A semiconductor device comprising:
an emitter layer;
5 a base layer; and
a collector layer, the sum of a band gap and electron affinity of said emitter layer being larger than the sum of a band gap and electron affinity of said base layer, wherein said base layer contains Bi.
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2. The semiconductor device according to claim 1, wherein said base layer contains GaAsBi.
3. The semiconductor device according to claim 1, wherein
15 said base layer contains GaAsBiN.
4. The semiconductor device according to claim 1, wherein
said base layer contains InPBi.
- 20 5. The semiconductor device according to claim 1, wherein
the amount of Bi contained in said base layer increases from
the emitter side toward the collector side.
- 25 6. The semiconductor device according to claim 1, wherein
said emitter layer includes at least one selected from the
group consisting of GaAs, AlGaAs, InGaP, and InP.
- 30 7. The semiconductor device according to claim 1, wherein
said collector layer includes at least one selected from the
group consisting of GaAs, InGaAs, and InP.